



# Search Report

EIC 1700

## STIC Database Tracking Number:

To: HOA LE  
Location: REM-9D61  
Art Unit: 1795  
Tuesday, February 26, 2008  
Phone: (571) 272-1332  
Case Serial Number: 10 / 554146

From: JAN DELAVAL  
Location: EIC1700  
REM-4B28 / REM-4A30  
Phone: (571) 272-2504  
[jan.delaval@uspto.gov](mailto:jan.delaval@uspto.gov)

## Search Notes

HOA VAN LE  
PRIMARY EXAMINER  
Hoa Van Le  
02/27/08

Access DB# 251376

## SEARCH REQUEST FORM

### Scientific and Technical Information Center

Requester's Full Name: HOA VAN LE Examiner #: 60626 Date: 13 February 2008  
Art Unit: 1795 Phone Number-30 2-1332 Serial Number: 10/554,146  
Mail Box and Bldg/Room Location: REM 9D61 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): \_\_\_\_\_ / Please see the attachment

SCIENTIFIC REFERENCE BR  
Sci & Tech Inf. Ctr.

Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

FFB 1 1/10/00  
Pat. & T.M. Office

Please search for crosslinked copolymers  
as disclosed in the claims.

Thank you.

**STAFF USE ONLY**

Type of Search		Vendors and cost where applicable
Searcher: <u>J.C.</u>	NA Sequence (#)	STN <input checked="" type="checkbox"/>
Searcher Phone #:	AA Sequence (#)	Dialog _____
Searcher Location:	Structure (#) <input checked="" type="checkbox"/>	Questel/Orbit _____
Date Searcher Picked Up: <u>2/26/08</u>	Bibliographic	Dr.Link _____
Date Completed: <u>2/26/08</u>	Litigation	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext	Sequence Systems _____
Clerical Prep Time: <u>45</u>	Patent Family	WWW/Internet _____
Online Time: <u>+30</u>	Other	Other (specify) _____

PTO-1590 (8-01)

=> fil hcaplus  
FILE 'HCAPLUS' ENTERED AT 08:19:15 ON 26 FEB 2008  
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FILE COVERS 1907 - 26 Feb 2008 VOL 148 ISS 9  
FILE LAST UPDATED: 25 Feb 2008 (20080225/ED)

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L82 ANSWER 1 OF 9 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 2004:1059635 HCAPLUS

DN 142:45859

TI Binder resin for toner and toner  
for electrophotography

IN Sakata, Kazuya; Yoshida, Takeshi

PA Mitsui Chemicals, Inc., Japan

SO PCT Int. Appl., 30 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004107058	A1	20041209	WO 2004-JP7663	20040527 <--
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	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
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	EP 1630620	A1	20060301	EP 2004-735132	20040527 <--
	R: DE, FR, GB				
	CN 1795419	A	20060628	CN 2004-80014584	20040527 <--
	US 2006251980	A1	20061109	US 2005-554146	20051024 <--
	IN 2005DN05463	A	20071005	IN 2005-DN5463	20051128 <--
PRAI	JP 2003-153550	A	20030529 <--		

AB WO 2004-JP7663 W 20040527 <--  
 Disclosed is a **binder resin** for **toners** which  
 is excellent in fixability and non-offset properties even when used in a  
 high-speed copier and is excellent also in suitability for pulverization,  
 long-lasting developing properties, etc.; and a **toner** for  
**electrophotog.** The **binder resin** for  
**toners** comprises a **resin** which is obtained by mixing a  
 vinyl polymer with a **crosslinked resin** obtained by  
 reacting a vinyl polymer having a specific **mol. weight**  
 and a specific functional-group content with a **crosslinking**  
 agent and which has a specific gel content. A **toner** made with  
 the **binder resin** is excellent in performances  
 including fixability even when used in a high-speed copier. Even when  
 continuously used for long in a copier, the **toner** gives  
**electrophotog.** prints with satisfactory reproduction

IC ICM G03G0009-087  
 ICS C08J0003-24

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 Section cross-reference(s): 38

ST **binder resin toner electrophotog**  
**crosslinked vinyl polymer**

IT **Electrophotographic toners**  
 (vinyl polymer **binder resin** for  
**electrophotog. toner**)

IT 25036-16-2P, Butyl acrylate-methacrylic acid-styrene copolymer  
 26428-43-3P, Butyl acrylate-glycidyl methacrylate-styrene  
 copolymer  
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (**binder resin**; vinyl polymer **binder**  
**resin** for **electrophotog. toner**)

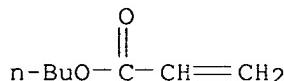
IT 25036-16-2P, Butyl acrylate-methacrylic acid-styrene copolymer  
 26428-43-3P, Butyl acrylate-glycidyl methacrylate-styrene  
 copolymer  
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (**binder resin**; vinyl polymer **binder**  
**resin** for **electrophotog. toner**)

RN 25036-16-2 HCPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate and  
 ethenylbenzene (CA INDEX NAME)

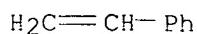
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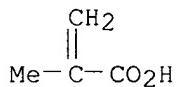
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 CMF C8 H8



CM 3

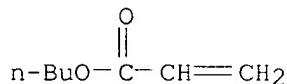
CRN 79-41-4  
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RN 26428-43-3 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, 2-oxiranylmethyl ester, polymer with butyl 2-propenoate and ethenylbenzene (CA INDEX NAME)

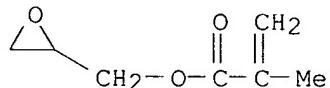
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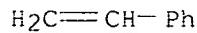
CM 2

CRN 106-91-2  
 CMF C7 H10 O3



CM 3

CRN 100-42-5  
 CMF C8 H8



## RETABLE

Referenced Author (RAU)	Year   VOL   PG	Referenced Work (R PY)   (R VL)   (R PG)	Referenced (RWK)	Referenced File
Canon Inc	2001	J P 2001188383 A	HCAPLUS	
Canon Inc	2002	I U S 20020098431 A	HCAPLUS	
Canon Inc	2002	J P 2002221813 A	HCAPLUS	

Canon Inc	2003	JJP 2003241427 A	HCAPLUS
Hitachi Kasei Kabushiki	1986	JJP 61-163347 A	HCAPLUS
Mitsui Toatsu Chemicals	1994	JJP 06-11890 A	HCAPLUS
Mitsui Toatsu Chemicals	1994	IUS 3570958 A	
Mitsui Toatsu Chemicals	1994	IEP 555022 A	HCAPLUS
Sekisui Chemical Co Ltd	1997	JJP 09-244295 A	HCAPLUS

L82 ANSWER 2 OF 9 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:842664 HCAPLUS

DN 141:358025

TI Electrophotographic toner binders and  
electrophotographic toners containing the same

IN Sakata, Kazuya; Yoshida, Takeshi

PA Mitsui Chemicals Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
PI JP 2004287295	A	20041014	JP 2003-81636	20030324 <--
JP 4017548	B2	20071205		

PRAI JP 2003-81636 20030324 <--

AB The title binder resin contains a crosslinking agent, vinyl polymer(H) consisting of: vinyl polymer(1) having 50,000-1,000,000 weight average mol. weight in THF soluble portion by GPC and ≤0.02 mol/kg resin of COOH, acid anhydride, or amino group content; and vinyl polymer(2) having 50,000-1,000,000 weight average

mol. weight and 0.1-2.0 mol/kg resin of COOH, acid anhydride, or amino group content, and vinyl polymer(L) having 4,000-50,000 weight average mol. weight and ≤0.7 mol/kg resin of COOH, acid anhydride, or amino group content, wherein the weight ratio of vinyl polymer(1)/vinyl polymer(2) is 10/90-90/10 and wherein the weight ratio of vinyl polymer(H)/vinyl polymer(L) is 5/95-40/60. The title binder contains 1-50 % gel portion. The binder provides good characteristics on toner image fixing, offset-resistance, and durability for high speed development.

IC ICM G03G0009-087

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 37

ST electrophotog toner binder vinyl polymer

IT Electrophotographic toners

(electrophotog. toner binders and  
electrophotog. toners containing the same)

IT 25036-16-2P, Styrene/butyl acrylate/ methacrylic acid copolymer

25767-47-9P, Styrene/butyl acrylate copolymer 26428-43-3P

, Styrene/butyl acrylate/glycidyl methacrylate copolymer

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(electrophotog. toner binders)

IT 25036-16-2P, Styrene/butyl acrylate/ methacrylic acid copolymer

25767-47-9P, Styrene/butyl acrylate copolymer 26428-43-3P

, Styrene/butyl acrylate/glycidyl methacrylate copolymer

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

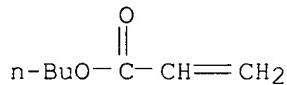
(electrophotog. toner binders)

RN 25036-16-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate and  
ethenylbenzene (CA INDEX NAME)

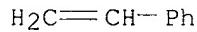
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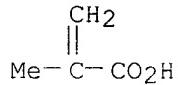
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CRN 100-42-5  
CMF C8 H8



CM 3

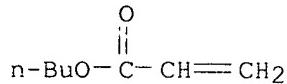
CRN 79-41-4  
CMF C4 H6 O2



RN 25767-47-9 HCAPLUS  
CN 2-Propenoic acid, butyl ester, polymer with ethenylbenzene (CA INDEX  
NAME)

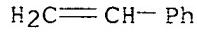
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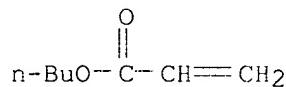
CRN 100-42-5  
CMF C8 H8



RN 26428-43-3 HCPLUS  
 CN 2-Propenoic acid, 2-methyl-, 2-oxiranylmethyl ester, polymer with butyl  
 2-propenoate and ethenylbenzene (CA INDEX NAME)

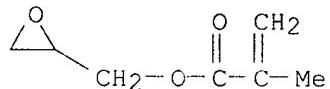
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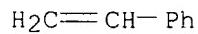
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CRN 106-91-2  
 CMF C7 H10 O3



CM 3

CRN 100-42-5  
 CMF C8 H8.



L82 ANSWER 3 OF 9 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 2004:143390 HCPLUS

DN 140:207400

TI Binder resin for toner and  
 electrophotographic toner containing the same

IN Sakata, Kazuya; Yoshida, Takeshi

PA Mitsui Chemicals, Inc., Japan

SO PCT Int. Appl., 34 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004015498	A1	20040219	WO 2003-JP10165	20030808 <--
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RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
 KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,  
 FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,  
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG  
 AU 2003254905 A1 20040225 AU 2003-254905 20030808 <--  
 EP 1564600 A1 20050817 EP 2003-784627 20030808 <--  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK  
 TW 238301 B 20050821 TW 2003-92121795 20030808 <--  
 CN 1675593 A 20050928 CN 2003-819211 20030808 <--  
 JP 4043475 B2 20080206 JP 2004-527385 20030808 <--  
 US 2005208410 A1 20050922 US 2004-515313 20041123 <--  
 US 7244538 B2 20070717

PRAI JP 2002-232002 A 20020808 <--  
 WO 2003-JP10165 W 20030808 <--

AB The invention relates to a **binder resin** for a **toner** which comprises at least three types of vinyl polymers each having a **mol. weight**, a content of a functional group or the like different from one another and a **crosslinking agent** preferably having a vinyl polymer structure, and has a specific gel content. The **binder resin** for a **toner** and a **toner** using the **resin** are excellent in the fixability at a low temperature and also are excellent in the resistance to offsetting phenomenon and blocking, pulverized properties, durability in development, and the like, and thus can be suitably used as those for a high speed copier.

IC ICM G03G0009-087  
 ICS C08J0003-24

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST Section cross-reference(s): 35  
 ST **binder resin toner electrophotog**  
 IT **Electrophotographic toners**

(**binder resin for toner** and **toner**)

IT 25036-16-2P, Styrene/butyl acrylate/methacrylic acid copolymer  
 26428-43-3P, Styrene/butyl acrylate/glycidyl methacrylate copolymer

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (**binder resin for toner** and **toner**)

IT 38637-59-1P, Styrene/butyl acrylate/methacrylic acid/glycidyl methacrylate copolymer  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(**binder resin for toner** and **toner**)

IT 25036-16-2P, Styrene/butyl acrylate/methacrylic acid copolymer  
 26428-43-3P, Styrene/butyl acrylate/glycidyl methacrylate copolymer  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

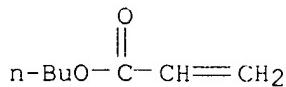
(**binder resin for toner** and **toner**)

RN 25036-16-2 HCPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate and ethenylbenzene (CA INDEX NAME)

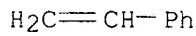
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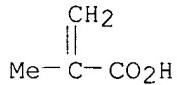
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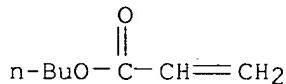
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RN 26428-43-3 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, 2-oxiranyl methyl ester, polymer with butyl 2-propenoate and ethenylbenzene (CA INDEX NAME)

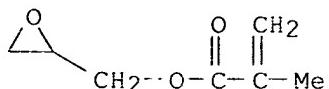
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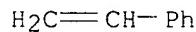


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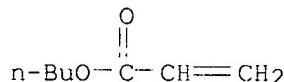
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CMF C8 H8

IT 38637-59-1P, Styrene/butyl acrylate/methacrylic acid/glycidyl methacrylate copolymer  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (binder resin for toner and toner  
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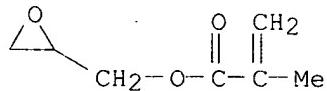
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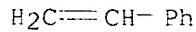
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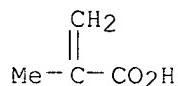
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CMF C7 H10 O3

CM 3

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CM 4

CRN 79-41-4  
CMF C4 H6 O2



## RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (R WK)	Referenced File
Canon Inc	2001			JP 2001188383 A	HCAPLUS
Canon Inc	2002			JP 2002148864 A	HCAPLUS
Canon Inc	2002			JP 200223417 A	
Mitsubishi Rayon Co Ltd	1995			JP 07-120972 A	HCAPLUS
Mitsubishi Rayon Co Ltd	1995			TW 412563 A	HCAPLUS
Sanyo Chemical Industri	2000			JP 200081729 A	
Sanyo Chemical Industri	2000			JP 200081730 A	
Sekisui Chemical Co Ltd	1997			JP 09-244295 A	HCAPLUS

L82 ANSWER 4 OF 9 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1998:210641 HCAPLUS

DN 128:315077

TI Electrophotographic toner with excellent characteristics

IN Sakata, Kazuya; Okada, Yasuo; Hata, Masaaki

PA Mitsui Toatsu Chemicals, Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 10087837	A	19980407	JP 1996-240420	19960911 <--
JP 3794762	B2	20060712		

PRAI JP 1996-240420 19960911 <--  
 AB The title toner comprises a polymer prepared from COOH-group-containing vinyl binders and glycidyl-group-containing vinyl crosslinking agents, wherein the polymer shows a 1st mol. weight peak at 1,000-30,000 and a 2nd mol. wt peak at 150,000-600,000 by a GPC anal., contains 1-30 % gel-components, and has a Tg of 45-75°. The toner shows excellent toner characteristics.

IC ICM C08G0081-00

ICS G03G0009-08; G03G0009-087

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 38

ST electrophotog toner vinyl binder

crosslinking agent

IT Crosslinking agents

Electrophotographic toners  
(electrophotog. toner with excellent characteristics)

IT 25036-16-2, n-Butyl acrylate-methacrylic acid-styrene copolymer  
26428-43-3, n-Butyl acrylate-glycidyl methacrylate-styrene copolymer

RL: DEV (Device component use); USES (Uses)

(electrophotog. toner with excellent characteristics)

IT 25036-16-2, n-Butyl acrylate-methacrylic acid-styrene copolymer  
 26428-43-3, n-Butyl acrylate-glycidyl methacrylate-styrene copolymer

RL: DEV (Device component use); USES (Uses)  
 (electrophotog. toner with excellent characteristics)

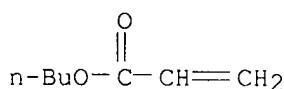
RN 25036-16-2 HCPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate and ethenylbenzene (CA INDEX NAME)

CM 1

CRN 141-32-2

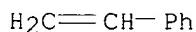
CMF C7 H12 O2



CM 2

CRN 100-42-5

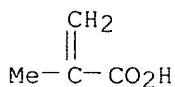
CMF C8 H8



CM 3

CRN 79-41-4

CMF C4 H6 O2



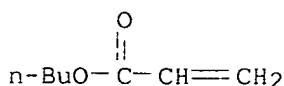
RN 26428-43-3 HCPLUS

CN 2-Propenoic acid, 2-methyl-, 2-oxiranylmethyl ester, polymer with butyl 2-propenoate and ethenylbenzene (CA INDEX NAME)

CM 1

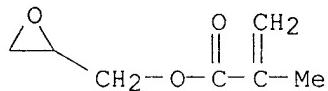
CRN 141-32-2

CMF C7 H12 O2



CM 2

CRN 106-91-2  
CMF C7 H10 O3



CM 3

CRN 100-42-5  
CMF C8 H8

H<sub>2</sub>C=CH- Ph

L82 ANSWER 5 OF 9 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 1997:794056 HCPLUS  
 DN 128:108413  
 TI **Electrophotographic toner using binder**  
 comprising carboxy-substituted vinyl **resin** and  
 glycidyl-substituted **resin** as hardener  
 IN Okada, Yasuo; Sakata, Kazuya; Hata, Masaaki  
 PA Mitsui Toatsu Chemicals, Inc., Japan; Mitsui Chemicals,  
 Inc.

SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09319140 JP 3532033	A B2	19971212 20040531	JP 1996-131648	19960527 <--

PRAI JP 1996-131648 19960527 <--  
 AB The **toner** consists of at least a colorant and the following  
**binder resins**: (A) a glycidyl-containing vinyl **resin**  
 with weight average **mol. weight** of 10,000-100,000 as a  
**crosslinking** agent and a COOH-containing vinyl **resin** with  
 acid value of 1-30 mg KOH/g and glass transition temperature Tg of  
 40-70°. The **toner** is applicable to high speed developer  
 and shows improved reproduction quality, anti-offset property, and prevention  
 of blocking and grinding.

IC ICM G03G0009-087  
 ICS G03G0009-08

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)

Section cross-reference(s): 38

ST **electrophotog toner binder resin;**  
 high speed developer **electrophotog toner**; carboxy  
 contg **resin binder electrophotog**  
**toner**; glycidyl contg **resin hardener binder**  
**toner**

IT **Binders**  
**Crosslinking agents**

**Electrophotographic toners**

(electrophotog. toner for high speed developer  
using binder comprising carboxy-substituted resin  
and glycidyl-substituted resin hardener)

IT 38637-59-1P, Butyl acrylate-glycidyl methacrylate-methacrylic acid-styrene copolymer  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(binder; electrophotog. toner for high speed developer using binder comprising carboxy-substituted resin and glycidyl-substituted resin hardener)

IT 38637-59-1P, Butyl acrylate-glycidyl methacrylate-methacrylic acid-styrene copolymer  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(binder; electrophotog. toner for high speed developer using binder comprising carboxy-substituted resin and glycidyl-substituted resin hardener)

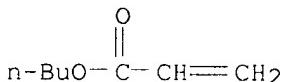
RN 38637-59-1 HCPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate, ethenylbenzene and 2-oxiranylmethyl 2-methyl-2-propenoate (CA INDEX NAME)

CM 1

CRN 141-32-2

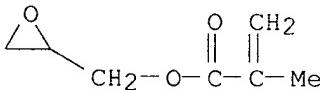
CMF C7 H12 O2



CM 2

CRN 106-91-2

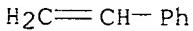
CMF C7 H10 O3



CM 3

CRN 100-42-5

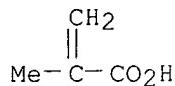
CMF C8 H8



CM 4

CRN 79-41-4

CMF C4 H6 O2



L82 ANSWER 6 OF 9 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 1994:667747 HCPLUS  
 DN 121:267747  
 TI **Electrophotographic toner** composition and its manufacture  
 IN Matsumoto, Takatsuru; Hirayama, Nobuhiro; Kawasaki, Shoji; Uchama, Kenji;  
 Uramoto, Katsuo; Fukui, Tamami  
 PA **Mitsui Toatsu Chemicals, Japan**  
 SO Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

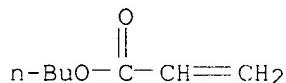
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06075427	A	19940318	JP 1992-226956	19920826 <--
JP 3139846	B2	20010305		
PRAI JP 1992-226956		19920826 <--		

AB The title **toner** composition consists mainly of an ethylenic polymer (Mw  $\leq$ 50,000 ; Mw/Mn  $\leq$ 3.0 ; Mw = weight average mol. weight; Mn = number average mol. weight) prepared from ethylenic unsatd. monomer 100 with multifunctional unsatd. monomer 5-40 and/or multifunctional polymerization initiator 0.5-12 parts. The **toner** showed improved low fixing temperature and wide offset temperature range, and provided superior high quality images.

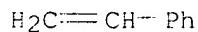
IC ICM G03G0009-087  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 ST **electrophotog developer toner** compn; polymn initiator  
**electrophotog toner binder;**  
**crosslinking agent electrophotog toner**  
**binder**  
 IT **Crosslinking agents**  
 Polymerization catalysts  
 (electrophotog. toner binder  
 resin for improved low fixing temperature)  
 IT **Electrophotographic developers**  
 (toners, electrophotog.-toner  
 binder resin for improved low fixing temperature)  
 IT 1321-74-0, Divinylbenzene, reactions 2358-84-1 3290-92-4,  
 Trimethylolpropanetrimethacrylate 15625-89-5,  
 Trimethylolpropanetriacrylate 26570-48-9, Polyethylene glycol diacrylate 52496-08-9, Polypropylene glycol diacrylate 104180-35-0  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (crosslinking agent of electrophotog. toner  
 binder resin for improved low fixing temperature)  
 IT 1705-60-8, 2,2-Bis[4,4-bis(tert-butylperoxy)cyclohexyl]propane  
 RL: CAT (Catalyst use); USES (Uses)  
 (electrophotog. toner binder  
 resin for improved low fixing temperature)

IT 25767-47-9, n-Butyl acrylate-styrene copolymer 27306-46-3,  
 Iso-Butyl acrylate-styrene copolymer 60806-47-5, n-Butyl  
 acrylate-divinylbenzene-styrene copolymer 85884-66-8 158895-10-4  
 RL: DEV (Device component use); POF (Polymer in formulation); TEM  
 (Technical or engineered material use); USES (Uses)  
 (electrophotog. toner binder  
 resin for improved low fixing temperature)  
 IT 83786-08-7, Tri-tert-butyl triperoxytrimellitate 158895-11-5  
 RL: CAT (Catalyst use); USES (Uses)  
 (polymerization initiator of electrophotog. toner  
 binder resin for improved low fixing temperature)  
 IT 25767-47-9, n-Butyl acrylate-styrene copolymer 60806-47-5  
 , n-Butyl acrylate-divinylbenzene-styrene copolymer  
 RL: DEV (Device component use); POF (Polymer in formulation); TEM  
 (Technical or engineered material use); USES (Uses)  
 (electrophotog. toner binder  
 resin for improved low fixing temperature)  
 RN 25767-47-9 HCPLUS  
 CN 2-Propenoic acid, butyl ester, polymer with ethenylbenzene (CA INDEX  
 NAME)

CM 1

CRN 141-32-2  
CMF C7 H12 O2

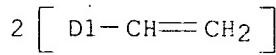
CM 2

CRN 100-42-5  
CMF C8 H8

RN 60806-47-5 HCPLUS  
 CN 2-Propenoic acid, butyl ester, polymer with diethenylbenzene and  
 ethenylbenzene (CA INDEX NAME)

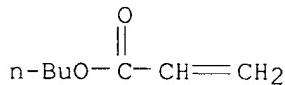
CM 1

CRN 1321-74-0  
CMF C10 H10  
CCI IDS



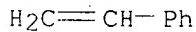
CM 2

CRN 141-32-2  
 CMF C7 H12 O2



CM 3

CRN 100-42-5  
 CMF C8 H8



L82 ANSWER 7 OF 9 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 1994:284939 HCPLUS  
 DN 120:284939  
 TI Resin composition for electrophotographic toner  
 IN Matsumoto, Katsuru; Hirayama, Nobuhiko; Uchiyama, Kenji  
 PA Mitsui Toatsu Chemicals, Inc., Japan  
 SO Eur. Pat. Appl., 55 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 568309	A2	19931103	EP 1993-303267	19930427 <--
	EP 568309	A3	19940727		
	EP 568309	B1	19970716		
	R: DE, FR, GB, NL				
	JP 06130721	A	19940513	JP 1993-89677	19930416 <--
	JP 2981362	B2	19991122		
	US 5502110	A	19960326	US 1993-52831	19930427 <--
	KR 9704162	B1	19970325	KR 1993-7139	19930428 <--
PRAI	JP 1992-110338	A	19920428	<--	
	JP 1992-152176	A	19920611	<--	
	JP 1992-154848	A	19920615	<--	

JP 1992-167351 A 19920625 <--  
 JP 1992-237295 A 19920904 <--

AB A **resin** composition for an **electrophotog. toner**  
 comprises an ethylene series high polymer (Y) and an ethylene series  
 polymer (X) prepared from 100 parts of a bifunctional ethylene series  
 unsatd. monomer and 0.01-10 parts by weight of a substance having  $\geq 3$   
 peroxide groups in the mol. and/or a substance having  $\geq 1$  unsatd.  
 functional groups and  $\geq 1$  peroxide groups in the mol. **Mw/Mb**  
 (**Mw** is weight-average mol. weight, and **Mb** is weight-average  
 mol. weight between crosslinking points) of the  
 polymer (X) being from 2 to 99, and the **Mw** of the polymer (X)  
 being 50,000 or less. This **resin** composition has an excellent  
 balance of phys. properties and particularly excellent offset resistance  
 and **toner** strength.

IC ICM G03G0009-087

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)

ST **resin electrophotog toner**

IT **Electrophotographic developers**

(toners, with excellent offset resistance and strength)

IT 9003-53-6, Styrene homopolymer 25767-47-9, Butyl

acrylate-styrene copolymer 60806-47-5, Butyl

acrylate-divinylbenzene-styrene copolymer

RL: TEM (Technical or engineered material use); USES (Uses)

(**electrophotog. toners** containing, for improved  
 strength)

IT 9003-53-6, Styrene homopolymer 25767-47-9, Butyl

acrylate-styrene copolymer 60806-47-5, Butyl

acrylate-divinylbenzene-styrene copolymer

RL: TEM (Technical or engineered material use); USES (Uses)

(**electrophotog. toners** containing, for improved  
 strength)

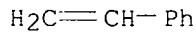
RN 9003-53-6 HCAPLUS

CN Benzene, ethenyl-, homopolymer (CA INDEX NAME)

CM 1

CRN 100-42-5

CMF C8 H8



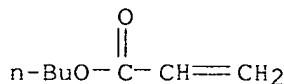
RN 25767-47-9 HCAPLUS

CN 2-Propenoic acid, butyl ester, polymer with ethenylbenzene (CA INDEX  
 NAME)

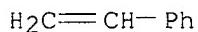
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CRN 141-32-2

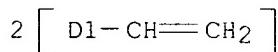
CMF C7 H12 O2



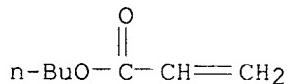
CM 2

CRN 100-42-5  
CMF C8 H8RN 60806-47-5 HCPLUS  
CN 2-Propenoic acid, butyl ester, polymer with diethenylbenzene and ethenylbenzene (CA INDEX NAME)

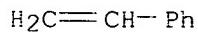
CM 1

CRN 1321-74-0  
CMF C10 H10  
CCI IDS

CM 2

CRN 141-32-2  
CMF C7 H12 O2

CM 3

CRN 100-42-5  
CMF C8 H8

L82 ANSWER 8 OF 9 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 1990:88192 HCPLUS  
 DN 112:88192  
 TI Resin for electrostatographic toner  
 IN Aizawa, Hironori; Shin, Masaaki; Okubo, Atsuo  
 PA Mitsui Toatsu Chemicals, Inc., Japan

SO PCT Int. Appl., 28 pp.  
CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 8904509	A1	19890518	WO 1987-JP858	19871106 <--
	W: JP, KR, US			RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE	
	EP 344308	A1	19891206	EP 1987-907344	19871106 <--
	EP 344308	B1	19940817		
	R: CH, DE, FR, GB, IT, LI, NL				
	CA 1314423	C	19930316	CA 1987-555654	19871230 <--
	US 5066727	A	19911119	US 1989-381748	19890626 <--

PRAI WO 1987-JP858 A 19871106 <--

AB A **resin** for electrostatog. **toner** is claimed, which contains as a major component a polymer obtained by mixing 20 to 80 parts by weight of a **low-mol.-weight** polymer having a number-average **mol. weight** of 1000 to 5000 and Tg of 40 to 75°, 80 to 20 parts by weight of a vinyl monomer, 0.01 to 5 parts by weight of a polymerization initiator, and 0 to 3 parts by weight of a **crosslinking** agent, dispersing the mixture in an aqueous system, and conducting polymerization

This

**resin** is excellent in low-temperature fixability, offset resistance, distinctness of images and prevents copied images from causing changes by, for example, bleeding of a plasticizer.

IC ICM G03G0009-08

ICS G03G0009-14

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST electrostatog **toner resin**

IT Electrography

(developers, **toners**)

IT Electrophotographic developers  
(**toners**)

IT 53351-70-5 60806-47-5

RL: USES (Uses)

(electrostatog. **toner** using)

IT 60806-47-5

RL: USES (Uses)

(electrostatog. **toner** using)

RN 60806-47-5 HCPLUS

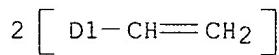
CN 2-Propenoic acid, butyl ester, polymer with diethenylbenzene and ethenylbenzene (CA INDEX NAME)

CM 1

CRN 1321-74-0

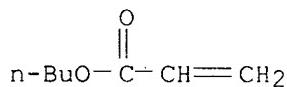
CMF C10 H10

CCI IDS



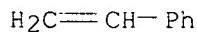
CM 2

CRN 141-32-2  
 CMF C7 H12 O2



CM 3

CRN 100-42-5  
 CMF C8 H8



L82 ANSWER 9 OF 9 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 1989:523747 HCAPLUS  
 DN 111:123747  
 TI Toner for electrophotography and manufacture thereof  
 IN Hirayama, Nobuhiko; Shin, Masaaki; Kawasaki, Shoji; Misawa, Akira;  
 Fujiwara, Akio; Uchiyama, Kenji  
 PA Mitsui Toatsu Chemicals, Inc., Japan  
 SO PCT Int. Appl., 45 pp.  
 CODEN: PIXXD2

DT Patent

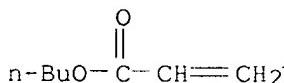
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 8900718	A1	19890126	WO 1987-JP719	19870930 <--
	W: KR, US				
	RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
	JP 01015752	A	19890119	JP 1987-171088	19870710 <--
	JP 2865201	B2	19990308		
	EP 323513	A1	19890712	EP 1987-906449	19870930 <--
	EP 323513	B1	19960103		
	EP 323513	B2	20060208		
	R: CH, DE, FR, GB, IT, LI, NL				
	CA 1316741	C	19930427	CA 1987-552739	19871125 <--
	US 5084368	A	19920128	US 1989-320239	19890224 <--

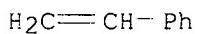
US 5362595 A 19941108 US 1992-966570 19921026 <--  
 PRAI JP 1987-171088 A 19870710 <--  
 WO 1987-JP719 W 19870930 <--  
 US 1989-320239 A3 19890224 <--  
 US 1991-747700 B1 19910820 <--  
 AB A toner for **electrophotog.** contains a **resin**  
 and a colorant as major components, and the **resin** is a non-  
**crosslinked** polymer of vinyl monomer or a mixture of such polymer  
 and has a number-average **mol. weight** (Mn) of 2,000-15,000, a  
 Z-average **mol. weight** (Mz) of ≥400,000 and an Mz to Mn  
 ratio of 50 to 600. This **toner** is excellent in fixability, etc.  
 at a high speed or at low temps.  
 IC ICM G03G0009-08  
 ICS G03G0009-14  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 Section cross-reference(s): 35  
 ST **electrophotog toner** vinyl polymer fixability  
 IT Polymerization  
     (of acrylic copolymers, in manufacture of **electrophotog.**  
     **toners**)  
 IT **Electrophotographic developers**  
     (**toners**, acrylic polymer-based, with good fixability at high  
     speed and low temperature)  
 IT 9017-48-5, Butyl methacrylate-divinylbenzene-styrene copolymer  
 25036-16-2, Butyl acrylate-methacrylic acid-styrene copolymer  
 25213-39-2, Butyl methacrylate-styrene copolymer  
 25767-47-9, Styrene-butyl acrylate copolymer 122564-20-9  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (**electrophotog. toners** containing, fixable at high  
     speed and low temperature)  
 IT 25036-16-2, Butyl acrylate-methacrylic acid-styrene copolymer  
 25213-39-2, Butyl methacrylate-styrene copolymer  
 25767-47-9, Styrene-butyl acrylate copolymer 122564-20-9  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (**electrophotog. toners** containing, fixable at high  
     speed and low temperature)  
 RN 25036-16-2 HCPLUS  
 CN 2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate and  
     ethenylbenzene (CA INDEX NAME)

CM 1

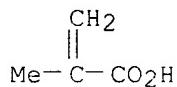
 CRN 141-32-2  
 CMF C7 H12 O2


CM 2

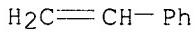
 CRN 100-42-5  
 CMF C8 H8



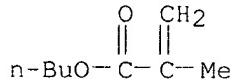
CM 3

CRN 79-41-4  
CMF C4 H6 O2RN 25213-39-2 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, butyl ester, polymer with ethenylbenzene (CA INDEX NAME)

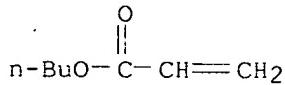
CM 1

CRN 100-42-5  
CMF C8 H8

CM 2

CRN 97-88-1  
CMF C8 H14 O2RN 25767-47-9 HCAPLUS  
CN 2-Propenoic acid, butyl ester, polymer with ethenylbenzene (CA INDEX NAME)

CM 1

CRN 141-32-2  
CMF C7 H12 O2

CM 2

CRN 100-42-5

CMF C8 H8



RN 122564-20-9 HCAPLUS

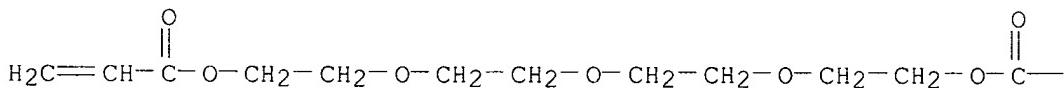
CN 2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate, ethenylbenzene and oxybis(2,1-ethanediyl) di-2-propenoate (9CI) (CA INDEX NAME)

CM 1

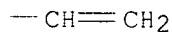
CRN 17831-71-9

CMF C14 H22 O7

PAGE 1-A



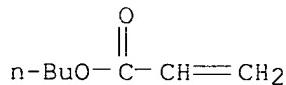
PAGE 1-B



CM 2

CRN 141-32-2

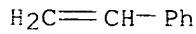
CMF C7 H12 O2



CM 3

CRN 100-42-5

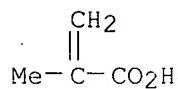
CMF C8 H8



CM 4

CRN 79-41-4

CMF C4 H6 O2



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L83 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2006:632877 HCAPLUS

DN 145:92930

TI Electrophotographic toners showing good fusion in  
 high-speed printing and their **binder resins**

IN Sakata, Kazuya; Kawasaki, Shunji; Sasaki, Ichiro; Uchiyama,  
 Kenji; Yoshida, Takeshi

PA Mitsui Chemicals Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2006171364	A	20060629	JP 2004-363799	20041216 <--
PRAI JP 2004-363799		20041216 <--		

AB The **toners**, forming offset-resistant images, comprise (A) carboxyl- and glycidyl-containing styrene-acryl **resins** of gel fraction 1-50% and (B) crystalline polyesters, at weight ratio of A/B (50-99):(1-50). The styrene-acryl **resins** may be **crosslinked** with glycidyl-containing vinyl **resins** of epoxy value 0.005-0.1 equiv/100 g.

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 38

ST **electrophotog toner binder** cryst polyester  
 acrylic **resin**; glycidyl **crosslinked** acrylic polymer  
**electrophotog toner binder**; offset resistant  
**electrophotog toner** high speed printing

IT Polymer blends

RL: TEM (Technical or engineered material use); USES (Uses)  
 (**binders**; **electrophotog. toners** containing  
 glycidyl- and carboxyl-containing acrylic **resins** and showing good  
 fusion on high-speed printing)

IT Polyesters, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
 (crystalline, **binders**; **electrophotog. toners**  
 containing glycidyl- and carboxyl-containing acrylic **resins** and  
 showing good fusion on high-speed printing)

IT Binders

**Electrophotographic toners**  
 (**electrophotog. toners** containing glycidyl- and  
 carboxyl-containing acrylic **resins** and showing good fusion on  
 high-speed printing)

IT 26428-43-3P, Butyl acrylate-glycidyl methacrylate-styrene  
 copolymer 38637-59-1P, Butyl acrylate-glycidyl  
 methacrylate-methacrylic acid-styrene copolymer 104493-49-4P, Fumaric  
 acid-propoxylated bisphenol A-terephthalic acid copolymer  
 869729-85-1P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(binders; electrophotog. toners containing glycidyl- and carboxyl-containing acrylic resins and showing good fusion on high-speed printing)

IT 461043-29-8P, 1,4-Butanediol-fumaric acid-1,6-hexanediol copolymer

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(electrophotog. toners containing glycidyl- and carboxyl-containing acrylic resins and showing good fusion on high-speed printing)

IT 26428-43-3P, Butyl acrylate-glycidyl methacrylate-styrene copolymer 38637-59-1P, Butyl acrylate-glycidyl

methacrylate-methacrylic acid-styrene copolymer 869729-85-1P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(binders; electrophotog. toners containing glycidyl- and carboxyl-containing acrylic resins and showing good fusion on high-speed printing)

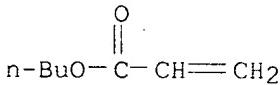
RN 26428-43-3 HCPLUS

CN 2-Propenoic acid, 2-methyl-, 2-oxiranylmethyl ester, polymer with butyl 2-propenoate and ethenylbenzene (CA INDEX NAME)

CM 1

CRN 141-32-2

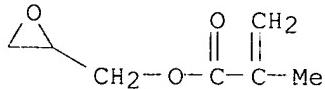
CMF C7 H12 O2



CM 2

CRN 106-91-2

CMF C7 H10 O3



CM 3

CRN 100-42-5

CMF C8 H8

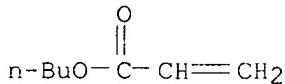


RN 38637-59-1 HCPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate, ethenylbenzene and 2-oxiranylmethyl 2-methyl-2-propenoate (CA INDEX NAME)

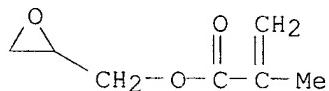
CM 1

CRN 141-32-2  
 CMF C7 H12 O2



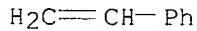
CM 2

CRN 106-91-2  
 CMF C7 H10 O3



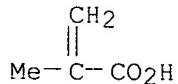
CM 3

CRN 100-42-5  
 CMF C8 H8



CM 4

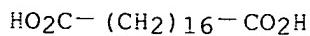
CRN 79-41-4  
 CMF C4 H6 O2



RN 869729-85-1 HCAPLUS  
 CN Octadecanedioic acid, polymer with 1,4-butanediol (9CI) (CA INDEX NAME)

CM 1

CRN 871-70-5  
 CMF C18 H34 O4



CM 2

CRN 110-63-4  
 CMF C4 H10 O2

HO—(CH<sub>2</sub>)<sub>4</sub>—OH

L83 ANSWER 2 OF 6 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 2003:892468 HCPLUS  
 DN 139:366427  
 TI **Thermosetting** powder coating composition, forming coating film,  
 and coating film  
 IN Mizoguchi, Mitsuyuki; Asami, Keiichi; Hirose, Yoshiharu  
 PA **Mitsui Chemicals, Inc., Japan**  
 SO U.S. Pat. Appl. Publ., 20 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003212216	A1	20031113	US 2003-430211	20030507 <--
EP 1362899	A2	20031119	EP 2003-10186	20030506 <--
EP 1362899	A3	20040121		
EP 1362899	B1	20060705		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
KR 2004030202	A	20040409	KR 2003-28605	20030506 <--
CN 1456616	A	20031119	CN 2003-123420	20030507 <--
JP 2004027214	A	20040129	JP 2003-128766	20030507 <--
PRAI JP 2002-131999	A	20020507 <--		
AB A <b>thermosetting</b> powder coating composition comprises a glycidyl group-containing acrylic copolymer component (A) and a curative component (B) composed of dodecanedioic acid linear polyacid anhydride or tetradecanedioic acid linear polyacid anhydride, where the time, $\delta T$ , required for decrease of the absolute value of a complex elastic modulus ( $\eta^*$ ) of the composition from 100,000 Pa-s to 5 Pa-s is $\leq 200$ s. The <b>thermosetting</b> powder coating composition is favorable for clear coating of automotive parts and automotive top clear coating, and exhibits, particularly in coating of a thin-film 35-50 $\mu\text{m}$ , excellent appearance (smoothness, gloss, transparency, etc.), phys. properties of practical level (hardness, scratch/mar resistance, etc.) and chemical properties (acid resistance, solvent resistance, etc.).				
IC ICM C08F0120-02				
INCL 525329700				
CC 42-10 (Coatings, Inks, and Related Products)				
ST automobile clear coat <b>thermosetting</b> powder coating				
IT Coating materials (powder; <b>thermosetting</b> powder coating composition of glycidyl methacrylate copolymer and polyacid <b>crosslinker</b> for hard, glossy and resistant automotive top coat thin films)				
IT Coating materials (topcoats; <b>thermosetting</b> powder coating composition of glycidyl methacrylate copolymer and polyacid <b>crosslinker</b> for hard, glossy and resistant automotive top coat thin films)				
IT 618910-69-3P 620974-04-1P 620974-07-4P 620974-08-5P 620974-09-6P 620974-10-9P				
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)				

(coating; **thermosetting** powder coating composition of glycidyl methacrylate copolymer and polyacid **crosslinker** for hard, glossy and resistant automotive top coat thin films)

IT 179530-22-4, KR 85

RL: MOA (Modifier or additive use); USES (Uses)  
 (for **crosslinking** aid; **thermosetting** powder coating composition of glycidyl methacrylate copolymer and polyacid **crosslinker** for hard, glossy and resistant automotive top coat thin films)

IT 29564-58-7P, Glycidyl methacrylate-methyl methacrylate-Styrene copolymer 63266-53-5P, Glycidyl methacrylate-isobutyl methacrylate-Methyl methacrylate-Styrene copolymer 206870-22-6P, Butyl methacrylate-glycidyl methacrylate-isobornyl acrylate-styrene copolymer 620974-05-2P, Cyclohexyl methacrylate-Glycidyl methacrylate-Isobornyl methacrylate-isobutyl methacrylate-Styrene copolymer 620974-06-3P, Cyclohexyl methacrylate-Glycidyl methacrylate-Isobornyl methacrylate-Styrene copolymer

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation and **crosslinking**; **thermosetting** powder coating composition of glycidyl methacrylate copolymer and polyacid **crosslinker** for hard, glossy and resistant automotive top coat thin films)

IT 29564-58-7P, Glycidyl methacrylate-methyl methacrylate-Styrene copolymer

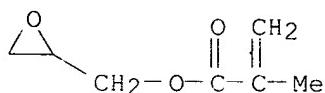
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation and **crosslinking**; **thermosetting** powder coating composition of glycidyl methacrylate copolymer and polyacid **crosslinker** for hard, glossy and resistant automotive top coat thin films)

RN 29564-58-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene and 2-oxiranylmethyl 2-methyl-2-propenoate (CA INDEX NAME)

CM 1

CRN 106-91-2  
 CMF C7 H10 O3



CM 2

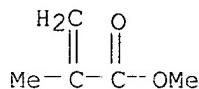
CRN 100-42-5  
 CMF C8 H8



CM 3

CRN 80-62-6

CMF C5 H8 O2



L83 ANSWER 3 OF 6 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 2003:94496 HCPLUS

DN 138:145039

TI **Electrophotographic toner**, its manufacturing method,  
and its sealing method in cartridge

IN Ishida, Masato; Kusagaya, Takeshi; Sasaki, Ichiro

PA Mitsui Takeda Chemical Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2003035967	A	20030207	JP 2001-224799	20010725 <--
PRAI JP 2001-224799		20010725	<--	

AB The toner is manufactured by polymerizing a liquid composition comprising  $\geq 1$  of a crosslinking agent and a resin with 1-60 mg-KOH/g acid value and  $\geq 1$  of styrene, acrylic, and methacrylic monomers. It is characterized by 0.80-0.97 average circularity measured by a flow particle image analyzer, 5-40° or 8-30° collapse angle by a powder tester, 15-40° repose angle, and 120-200 shape factor (SF 1). The sealing method of the toner in cartridge for leaking prevention is also claimed. The toner shows good flowability and improved sealing in the cartridge.

IC ICM G03G0009-08

ICS G03G0009-087; G03G0015-08

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST **electrophotog toner** acrylic polymer suspension polymn;  
toner particle circularity repose angleIT **Electrophotographic toners**(electrophotog. toner formed by suspension polymerization  
and showing good flowability)

IT Polyesters, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
(electrophotog. toner formed by suspension polymerization  
and showing good flowability)IT 25767-47-9P, Butyl acrylate-styrene copolymer 60806-47-5P  
, Butyl acrylate-divinylbenzene-styrene copolymer  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)(electrophotog. toner formed by suspension polymerization  
and showing good flowability)IT 26659-32-5, Bisphenol A-terephthalic acid copolymer, sru 26659-86-9,  
Bisphenol A-terephthalic acid copolymer 87945-57-1, Bisphenol A-fumaric  
acid-terephthalic acid copolymerRL: TEM (Technical or engineered material use); USES (Uses)  
(electrophotog. toner formed by suspension polymerization  
and showing good flowability)

IT 25767-47-9P, Butyl acrylate-styrene copolymer 60806-47-5P

, Butyl acrylate-divinylbenzene-styrene copolymer  
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (electrophotog. toner formed by suspension polymerization and showing good flowability)

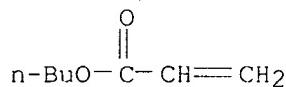
RN 25767-47-9 HCPLUS

CN 2-Propenoic acid, butyl ester, polymer with ethenylbenzene (CA INDEX NAME)

CM 1

CRN 141-32-2

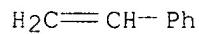
CMF C7 H12 O2



CM 2

CRN 100-42-5

CMF C8 H8



RN 60806-47-5 HCPLUS

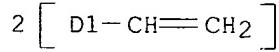
CN 2-Propenoic acid, butyl ester, polymer with diethenylbenzene and ethenylbenzene (CA INDEX NAME)

CM 1

CRN 1321-74-0

CMF C10 H10

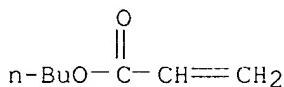
CCI IDS



CM 2

CRN 141-32-2

CMF C7 H12 O2



CM 3

CRN 100-42-5  
CMF C8 H8 $\text{H}_2\text{C}=\text{CH}-\text{Ph}$ 

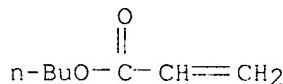
L83 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2002:291845 HCAPLUS  
 DN 136:316890  
 TI A **toner binder** for **electrophotographic toner**  
 IN Iwa, Tsuyoshi; Sakata, Kazuya; Kawasaki, Shoji; Shin, Masaaki  
 PA Mitsui Chemicals Inc., Japan  
 SO Eur. Pat. Appl., 19 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1197805	A2	20020417	EP 2001-124159	20011010 <--
EP 1197805	A3	20030514		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
TW 227384	B	20050201	TW 2001-90124998	20011009 <--
JP 2002189316	A	20020705	JP 2001-312674	20011010 <--
JP 3929272	B2	20070613		
CN 1349135	A	20020515	CN 2001-141546	20011012 <--
US 2002076637	A1	20020620	US 2001-974893	20011012 <--
US 6497983	B2	20021224		
PRAI JP 2000-312017	A	20001012 <--		
AB The present invention is aimed at providing a <b>toner binder</b> for <b>electrophotog.</b> that is excellent in the fixing property, offset resistance, blocking property, grindability, durable developing property and the like to correspond to the high-speed movement of a copier. The <b>toner binder</b> is obtained by heating and melting a vinyl <b>resin</b> (a) containing glycidyl groups and a vinyl <b>resin</b> (b) containing carboxyl groups, to be crosslinked by the use of vinyl <b>resin</b> (a) as a crosslinking agent. The viscoelasticity of the <b>toner binder</b> is measured in the temperature range of 50-200°C and at a heating rate of 2°C/min., the viscoelasticity curve in the temperature range of 100-200°C showing the relationship between the storage modulus and temperature, in which curve the axis of ordinate is the logarithm (Pa) of storage modulus G, and the axis of abscissa is temperature, has a concave in the temperature range of 140-180°C and has a min. value of storage modulus G' 0 at the bottom of the range, and this G' 0 and storage modulus G' 200 at 200°C are G' 0 < G' 200 and the difference ΔG' (G' 200 - G' 0 = ΔG') is 300 Pa or more.				

IC ICM G03G0009-087  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 35, 38  
 ST electrophotog toner binder  
 IT Electrophotographic toners  
     (toner binder for electrophotog.  
     toner)  
 IT 38637-59-1P, Butyl acrylate-glycidyl methacrylate-methacrylic acid-styrene copolymer  
     RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
     (crosslinked; toner binder for  
     electrophotog. toner containing)  
 IT 38637-59-1P, Butyl acrylate-glycidyl methacrylate-methacrylic acid-styrene copolymer  
     RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
     (crosslinked; toner binder for  
     electrophotog. toner containing)  
 RN 38637-59-1 HCPLUS  
 CN 2-Propenoic acid, 2-methyl-, polymer with butyl 2-propenoate, ethenylbenzene and 2-oxiranylmethyl 2-methyl-2-propenoate (CA INDEX NAME)

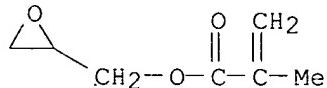
CM 1

CRN 141-32-2  
 CMF C7 H12 O2



CM 2

CRN 106-91-2  
 CMF C7 H10 O3



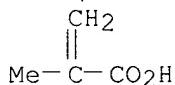
CM 3

CRN 100-42-5  
 CMF C8 H8



CM 4

CRN 79-41-4  
 CMF C4 H6 O2



L83 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2000:43386 HCAPLUS  
 DN 132:94731  
 TI **Thermosetting resin** compositions containing phosphine oxides and their cured products and protecting films  
 IN Mizuta, Yasushi; Kikuta, Yoshio; Noboru, Tadahito; Takagi, Usaji  
 PA **Mitsui Chemicals Inc., Japan**  
 SO Jpn. Kokai Tokkyo Koho, 12 pp.  
 CODEN: JKXXAF  
 DT **Patent**  
 LA Japanese  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000017053	A	20000118	JP 1998-184961	19980630 <--
JP 3693500	B2	20050907		
PRAI JP 1998-184961		19980630 <--		
OS MARPAT 132:94731				

AB The compns. contain (A) 40-90 parts epoxy **resins** having  $\geq 2$  epoxy groups, (B) 10-60 parts polybasic carboxylic acid esters with monohydric alcs.  $R_1(CO_2Z)_n$  ( $R_1$  = linkage group derived from C1-35 aliphatic hydrocarbon, aromatic hydrocarbon, aliphatic hydrocarbon, or their derivs.; Z = C1-18 aliphatic hydrocarbon or aromatic substituent derived from monohydric alc.; n  $\geq 2$ ), and (C) 0.01-10 phr phosphine oxides [(NR22)3P:N]3P:O (I; R2 = H, C1-10 hydrocarbyl). Cured products and protecting films from the compns. for liquid crystal display color filters are also claimed. Thus, a composition containing glycidyl methacrylate-Me methacrylate-styrene copolymer 76, tri-Bu trimellitate 24, I (R2 = Me) 1, propylene glycol Me ether acetate 144, and Megafac F 142D 0.01, and  $\gamma$ -glycidoxypropyltrimethoxysilane 4.5 parts showing good storage stability was applied on a color filter and cured at 200° for 1 h to give a protecting film with high surface flatness, adhesion to the filter, hardness, and good heat and solvent resistance.

IC ICM C08G0059-68  
 ICS C08G0059-42; C09D0163-00; G02B0005-20  
 CC 42-9 (Coatings, Inks, and Related Products)  
 Section cross-reference(s): 74

ST acrylic epoxy coating polybasic ester **crosslinking** agent; protective coating epoxy **resin** color filter LCD; liq crystal display color filter protective coating; **thermosetting** epoxy **resin** phosphine oxide curing accelerator

IT Coating materials  
 (heat- and solvent-resistant; **thermosetting** epoxy **resin** coating compns. containing phosphine oxide curing accelerators for color filters of liquid crystal displays)

IT **Crosslinking catalysts**  
 (phosphine oxides; **thermosetting** epoxy **resin** coating compns. containing phosphine oxide curing accelerators for color filters of liquid crystal displays)

IT Liquid crystal displays

## Optical filters

(thermosetting epoxy resin coating compns. containing phosphine oxide curing accelerators for color filters of liquid crystal displays)

IT Epoxy resins, uses

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(thermosetting epoxy resin coating compns. containing phosphine oxide curing accelerators for color filters of liquid crystal displays)

IT Coating materials

(thermosetting; thermosetting epoxy resin coating compns. containing phosphine oxide curing accelerators for color filters of liquid crystal displays)

IT 102299-22-9 255063-52-6

RL: CAT (Catalyst use); USES (Uses)

(curing accelerator; thermosetting epoxy resin coating compns. containing phosphine oxide curing accelerators for color filters of liquid crystal displays)

IT 117-81-7

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(plasticizer; thermosetting epoxy resin coating compns. containing phosphine oxide curing accelerators for color filters of liquid crystal displays)

IT 29564-58-7P, Dioctyl phthalate-glycidyl methacrylate-methyl

methacrylate-styrene copolymer 255063-49-1P, Glycidyl

methacrylate-methyl methacrylate-styrene-tributyl trimellitate copolymer

255063-51-5P, Dioctyl adipate-glycidyl methacrylate-methyl

methacrylate-styrene copolymer

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(thermosetting epoxy resin coating compns. containing phosphine oxide curing accelerators for color filters of liquid crystal displays)

IT 29564-58-7P, Dioctyl phthalate-glycidyl methacrylate-methyl

methacrylate-styrene copolymer

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(thermosetting epoxy resin coating compns. containing phosphine oxide curing accelerators for color filters of liquid crystal displays)

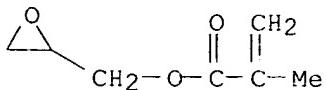
RN 29564-58-7 HCPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene and 2-oxiranylmethyl 2-methyl-2-propenoate (CA INDEX NAME)

CM 1

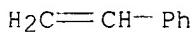
CRN 106-91-2

CMF C7 H10 O3



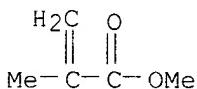
CM 2

CRN 100-42-5  
CMF C8 H8



CM 3

CRN 80-62-6  
CMF C5 H8 O2



L83 ANSWER 6 OF 6 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 1987:34066 HCPLUS  
 DN 106:34066  
 TI Methyl methacrylate syrup composition  
 IN Watanabe, Katsushi; Kageyama, Takafumi; Kano, Taisaku; Hirai, Koichi;  
 Ichihara, Yoshinobu  
 PA Mitsui Toatsu Chemicals, Inc., Japan  
 SO U.S., 7 pp.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 4617367	A	19861014	US 1984-675568	19841128 <--
PRAI US 1984-675568		19841128 <--		
AB The title composition, which gives cured moldings having good water resistance, is prepared by mixing a syrup containing glycidyl groups with a syrup containing functional groups reactive with glycidyl groups. Thus, a syrup (31% polymerized) prepared from a 70.0:25.0:3.0:1.6 Me methacrylate (I)-styrene-trimethylolpropane trimethacrylate (II)-methacrylic acid mixture 49.5, a syrup (38% polymerized) prepared from a 54.0:23.0:20.0:2.0 I-styrene-glycidyl methacrylate-II mixture 49.5, and tert-Bu peroxyneodecanoate 1.0 part were mixed and cured 1 h at 70° to give a transparent molding which was unchanged after 16 h in boiling water.				
IC ICM C08F0220-14				
INCL 526273000				
CC 37-6 (Plastics Manufacture and Processing)				
ST methacrylate copolymer syrup curing; glycidyl methacrylate syrup curing; <b>crosslinking</b> methacrylate syrup molding; waterproofing molding methacrylate; methacrylic acid curing molding				
IT Water-resistant materials (methacrylate copolymer syrups for molded, <b>crosslinkable</b> )				
IT <b>Crosslinking</b> (of glycidyl-containing and glycidyl-reactive methacrylate polymer syrups, for water resistance)				
IT 80-62-6D, polymers with glycidyl-containing and glycidyl-reactive acrylic monomers 100-42-5D, polymers with glycidyl-containing and glycidyl-reactive acrylic monomers 868-77-9D, 2-Hydroxyethyl methacrylate, polymers with				

glycidyl-containing and glycidyl-reactive acrylic monomers 3290-92-4D,  
 polymers with glycidyl-containing and glycidyl-reactive acrylic monomers  
**29564-58-7**, Glycidyl methacrylate-methyl methacrylate-styrene  
 copolymer 42751-75-7 55567-80-1, Butyl methacrylate-glycidyl  
 methacrylate-methyl methacrylate-styrene copolymer 106126-77-6  
 106126-78-7 106126-79-8

RL: USES (Uses)

IT (curable Me methacrylate syrups containing, for waterproof moldings)  
**29564-58-7**, Glycidyl methacrylate-methyl methacrylate-styrene  
 copolymer

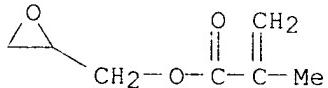
RL: USES (Uses)

RN (curable Me methacrylate syrups containing, for waterproof moldings)  
**29564-58-7** HCPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene and  
 2-oxiranylmethyl 2-methyl-2-propenoate (CA INDEX NAME)

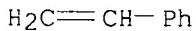
CM 1

CRN 106-91-2  
 CMF C7 H10 O3



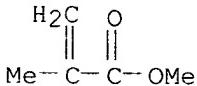
CM 2

CRN 100-42-5  
 CMF C8 H8



CM 3

CRN 80-62-6  
 CMF C5 H8 O2



=> d his

(FILE 'HOME' ENTERED AT 07:51:02 ON 26 FEB 2008)  
 SET COST OFF

L1 FILE 'HCPLUS' ENTERED AT 07:51:14 ON 26 FEB 2008  
 1 S US20060251980/PN OR (US2005-554146# OR WO2004-JP7663 OF JP200  
 E SAKATA/AU  
 L2 1 S E3

L3            E SAKATA K/AU  
       179 S E3-E5, E49  
           E SAKATA NAME/AU  
L4            11 S E4  
           E KAZUYA/AU  
           E YOSHIDA/AU  
L5            5 S E3  
           E YOSHIDA T/AU  
           E YOSHIDA TAKE/AU  
L6            1031 S E26  
           E YOSHIDA T/AU  
L7            1779 S E3-E8  
           E YOSHIDA NAME/AU  
L8            123 S E4  
           E TAKESHI/AU  
L9            4 S E3  
L10          4 S E119  
           E TAKESHI Y/AU  
L11          4 S E3, E14  
           E MITSUI/CO  
L12          8713 S E51-E108  
L13          8029 S E51-E108/PA, CS  
           E E100+ALL  
L14          31657 S E2+RT OR E2-E69/PA, CS  
           SEL RN L1

FILE 'REGISTRY' ENTERED AT 07:56:29 ON 26 FEB 2008  
L15          2 S E1-E2

FILE 'HCAPLUS' ENTERED AT 07:59:19 ON 26 FEB 2008  
L16          1356 S L15  
L17          29 S L16 AND L1-L14  
L18          12 S L17 AND TONER?/CW, CT  
L19          20 S L17 AND TONER?  
           E ELECTROPHOTOGRAPHIC TONER/CT  
L20          11240 S E4-E8  
           E E4+ALL  
L21          21987 S E4+OLD, NT  
L22          20 S L17 AND L20, L21  
L23          20 S L18, L19, L22  
L24          9 S L17 NOT L23  
L25          0 S L23 AND PY<=2004 NOT P/DT  
L26          19 S L23 AND (PY<=2004 OR PRY<=2004 OR AY<=2004) AND P/DT  
L27          14 S L26 AND BIND? AND ?RESIN?  
L28          17 S L26 AND (BIND? OR ?RESIN?)  
L29          6 S L26 AND (?CROSSLINK? OR ?CROSS LINK?)  
L30          2 S L26 AND C08J003-24/IPC, IC, ICM, ICS  
L31          6 S L29, L30  
L32          6 S L31 AND L27, L28  
L33          13 S L26-L31 NOT L32

FILE 'REGISTRY' ENTERED AT 08:03:42 ON 26 FEB 2008

FILE 'HCAPLUS' ENTERED AT 08:03:53 ON 26 FEB 2008  
           SEL RN L32

FILE 'REGISTRY' ENTERED AT 08:05:39 ON 26 FEB 2008  
L34          8 S E1-E10 NOT L15  
           SEL RN 3 5  
L35          2 S E11-E12

FILE 'HCAPLUS' ENTERED AT 08:06:45 ON 26 FEB 2008

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L36      47 S L35
L37      9 S L36 AND L1-L14
L38      0 S L37 AND PY<=2004 NOT P/DT
L39      9 S L37 AND (PY<=2004 OR PRY<=2004 OR AY<=2004) AND P/DT
L40      25 S L39,L26
L41      20 S L40 AND (BIND? OR ?RESIN?)
L42      22 S L40 AND TONER?
L43      22 S L40 AND L20,L21
L44      25 S L40-L43
L45      10 S L44 AND (?CROSSLINK? OR ?CROSS LINK?)
L46      2 S L44 AND C08J003-24/IPC,IC,ICM,ICS
L47      10 S L32,L45,L46
L48      8 S L47 AND ?ELECTROPHOTO?
L49      8 S L47 AND G03G009/IPC,IC,ICM,ICS
L50      8 S L48,L49
L51      2 S L47 NOT L50
L52      8 S L32,L50
L53      17 S L33,L40 NOT L52
          SEL AN 9 13 14 ..
L54      14 S L53 NOT E13-E18
L55      14 S L53 AND ?ELECTROPHOTO?
L56      22 S L52,L55 AND L1-L14,L16-L33,L36-L55
L57      16 S L56 NOT L32
          SEL RN
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FILE 'REGISTRY' ENTERED AT 08:10:29 ON 26 FEB 2008

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L58      52 S E19-E70
L59      46 S L58 NOT L15,L34
L60      38 S L59 AND PMS/CI
L61      6 S L60 AND 2/NC
L62      11 S L60 AND 3/NC
L63      7 S L60 AND 4/NC
L64      14 S L60 NOT L61-L63
L65      18 S L62,L63
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FILE 'HCAPLUS' ENTERED AT 08:15:48 ON 26 FEB 2008

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L66      1220 S L65
L67      40 S L66 AND L1-L14
L68      0 S L67 AND PY<=2004 NOT P/DT
L69      40 S L67 AND (PY<=2004 OR PRY<=2004 OR AY<=2004) AND P/DT
L70      31 S L69 AND (BIND? OR ?RESIN?)
L71      27 S L69 AND TONER?
L72      26 S L69 AND L20,L21
L73      26 S L69 AND ELECTROPHOTO?
L74      8 S L69 AND (?CROSSLINK? OR ?CROSS LINK?)
L75      0 S L69 AND C08J003-24/IPC,IC,ICM,ICS
L76      26 S L69 AND G03G009/IPC,IC,ICM,ICS
L77      16 S L74,L56 AND (?CROSSLINK? OR ?CROSS LINK? OR C08J003-24/IPC,IC
L78      16 S L77 AND L1-L14,L16-L33,L36-L67,L66-L77
L79      15 S L78 NOT 124:11099/DN
L80      2 S L79 AND THERMOSET?
L81      15 S L79,L80
```

FILE 'HCAPLUS' ENTERED AT 08:19:15 ON 26 FEB 2008

```
L82      9 S L81 AND (MW OR (M OR MOL OR MOLECULAR?) () (W OR WT OR WEIGHT))
L83      6 S L81 NOT L82
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